

AXA IM ESG Methodologies

ESG scoring, SFDR principal adverse impacts (PAIs),
carbon & biodiversity footprint methodologies



BNP PARIBAS
ASSET MANAGEMENT

IMPORTANT INFORMATION: Following the combination of BNP Paribas Asset Management (BNPP AM) and AXA Investment Managers (AXA IM), we are currently working to develop a new sustainability approach. **This document applies to the eligible investment portfolios managed by AXA IM before the combination of entities. The document will be replaced in due time as part of the development of joint policies. For the latest applicable policies, please visit this page on our website: <https://www.bnpparibas-am.com/en/what-we-do/sustainability-policies-reports>**

For information on the application of this policy to a specific fund (including applicable methodology), please refer to the relevant product's legal documentation. These documents can be found on the relevant Funds pages available on our website.

Introduction

ESG integration as standard

Responsible investment (RI) has been part of AXA IM's DNA since its founding in 1994, with the first dedicated RI mandate dating back to 1998. As a leading actor in the financial services industry, we believe at AXA IM that responsible investment lead to value creation and that Environmental, Social and Governance (ESG) criteria have the potential to impact positively not only investment portfolios across asset classes, sectors, companies and regions but also a multitude of other client and stakeholder interests.

Leveraging our two decades of RI experience, we integrate ESG analysis into all our investment platforms, providing fund managers with access to many ESG key performance indicators (KPIs), such as ESG scores, carbon footprint, etc., in the front office tools they use on a daily basis, as well as additional ESG-related data and research content.

Our conviction is that RI is a key driver of value creation. AXA IM has invested significant resources into building a team of experienced RI professionals who acts as a center of excellence, supporting the integration of ESG risks and opportunities in the investment processes of our investment platforms.

Our RI expertise is now embedded within all investment and research teams, who are responsible for RI-related activities and research, ESG data computation, scoring, analytics, stock/credit analysis and active ownership/engagement. RI experts come from various backgrounds such as fund management, sell-side research, financial or non-financial quantitative analysis, legal, coupled with relevant RI experience. This ensures the proper integration of RI issues with an investment-relevant approach.

At product-level, some of our investment strategies apply binding criteria in relation with some of these ESG KPIs, as described in their legal documentation¹.

In-depth ESG research provides complementary analysis to traditional financial research, as we consider these issues may have financial impacts for companies in the short and/or long-term time horizon.

AXA IM ESG integration approach

Across all four AXA IM business lines², investment and reporting teams have access to a wide range ESG KPIs and analysis on ESG factors to ensure ESG risks and opportunities are incorporated into company analysis:

- **ESG scores:** they range from 0 to 10 for each ESG pillar across all AXA IM asset classes. These scores are then made available to portfolio managers and analysts across the company. RI specialists within the investment teams are also able to help portfolio managers and financial analysts in their understanding of the analysis of a company (see section I.);

¹ See AXA IM Fund Centre for more information: [Fund Centre - AXA IM - Core](#)

² **AXA IM Core** for traditional assets (fixed income, equities, multi-asset), **AXA IM Alts** for real and private assets (incl real estate and infrastructure equity & debt, alternative credit & impact private equity), **AXA IM Prime** for private markets & hedge funds (incl. private equity & debt, infrastructure equity, hedge funds, NAV financing, GP stake), **AXA IM Select** (incl. multi manager funds of funds, notably unit-linked).



- **SFDR Principal Adverse Impacts (PAIs) indicators:** PAIs are disclosed both at entity-level (for some EU legal entities in-scope of PAI Statements disclosure)³ and at product-level (for all our SFDR Article 8 and 9 financial products) (see section II.);
- **Other ESG KPIs:** Investment teams have access to many other data and analysis on ESG factors, across the large majority of asset classes. More specifically, a package of environmental-related KPIs is available in the various front office tools used within each business line to allow the full understanding and analysis at issuer level. This leverages our relationship with providers such as MSCI, S&P Trucost, ISS ESG, Beyond Ratings, Iceberg Data Lab or Octus FinDox. In this handbook, we notably provide information on our carbon & biodiversity footprint methodologies across our various asset classes (see sections III. & IV.);
- **Internal and external ESG research:** internal ESG research, deployed at AXA IM-level (through its RI Center) or at business line level, focuses on themes related to *e.g.*, climate change, biodiversity, human rights and human capital. These analyses are supported by broker research, as well as regular meetings with companies, participation in conferences and industry events. In particular, AXA IM RI Center provides analysis and insights on various sector-related ESG issues, as well as ESG controversies assessment;
- **Trainings on key ESG issues and on engagement done** by the RI experts through physical and technology-enabled sessions.

AXA IM is committed to reinforce ESG integration by continuously increasing the coverage in terms of asset classes, developing ESG research and data solutions available to investment teams and reinforcing its own internal research capabilities.

However, as of today, except for certain regulatory ESG KPIs (such SFDR PAIs), there is no market standard for most ESG KPIs (such as ESG scoring) and big market players are still failing to address all dimensions of ESG factors and standardize market practices.

How are ESG KPIs used?

ESG KPIs & scores are an easy way to synthesize all material ESG information to then choose between thousands of issuers. It is the first step to assess the ESG quality of an issuer or of a portfolio relative to its benchmark or peers.

Thanks to these ESG KPIs & scores produced by the dedicated RI teams in each AXA IM business unit, fund managers can assess how companies mitigate ESG risks or use ESG dimension to improve their competitive position within their own sector. It allows every portfolio manager to identify the best ESG players and avoid the riskiest issuers regardless of their investment universe, by selecting their investment strategy accordingly, while preserving portfolio diversification where needed.

³ More information are available on AXA IM website: [Sustainable Finance | AXA IM Corporate \(axa-im.com\)](https://www.axa-im.com/en/sustainable-finance)

I. ESG scoring methodologies

AXA IM uses ESG scores to identify and understand the impacts of ESG risks and opportunities on issuers and manage those impacts within the portfolio construction and management process with the objective to maximize ESG risk-adjusted returns. We believe an ESG scoring system is a **necessary step to synthesize all material ESG information** to further discriminate between thousands of issuers. It is also the starting point to assess the ESG quality of an issuer or of a portfolio relative to its benchmark or peers.

ESG factors are financially material due to their impacts, positive and/or negative, on the cost of capital, issuer's credit risk, but also on the generation of sales and profits as well as on cash flow projections. The exposure to sustainability risks and opportunities and the nature of their impact varies by industries, consequently, the identification and analysis of the materiality of key ESG issues (in certain cases at a sectorial level) considering the timeframe is key. Then, comes the importance of assigning weights to those issues to build a comprehensive ESG score which properly reflects the issuer's degree of exposure to sustainability opportunities and potential risks. ESG scores, as well as the analysis per E, S and G pillars, aim to inform portfolio managers' decision-making process by providing them an overview on where and how ESG factors contribute to risk-adjusted returns and prevent exposure to risks which could ultimately affect the financial performance.

Whilst the ESG data market has been maturing and to a certain extent converging towards a few providers, no universal standard exists and the correlation between ESG data providers across their universe remains low, at 54% on average and much lower than between credit rating agencies (according to Berg *et al.*, 2022⁴). The correlation of ESG ratings from the several data providers is indeed relatively low as there is no consensus regarding the actual relative materiality of key ESG issues in relation to each other when ESG issues are taken as a whole. Overall, the materiality assessment of E, S and G issues together is a complex exercise, which requires to take into account a multitude of parameters that should not be simplified, neither at a sectorial nor a cross-sectorial level, especially for financial products designed to mitigate exposure to ESG risks.

Therefore, and to better reflect the specificities of each of our main asset classes, **different ESG scoring methodologies are used depending on the asset classes**, as described in this section⁵. For almost all covered asset classes, using a model from a recognized external data provider completed by internal analysis appears a good way to add value to clients by bringing together best-of-breeds, giving a balanced view while mitigating providers biases, and preserving our issuer selection duty.

Corporates scoring methodologies (AXA IM Core & Alts)

Listed corporate assets ESG rating

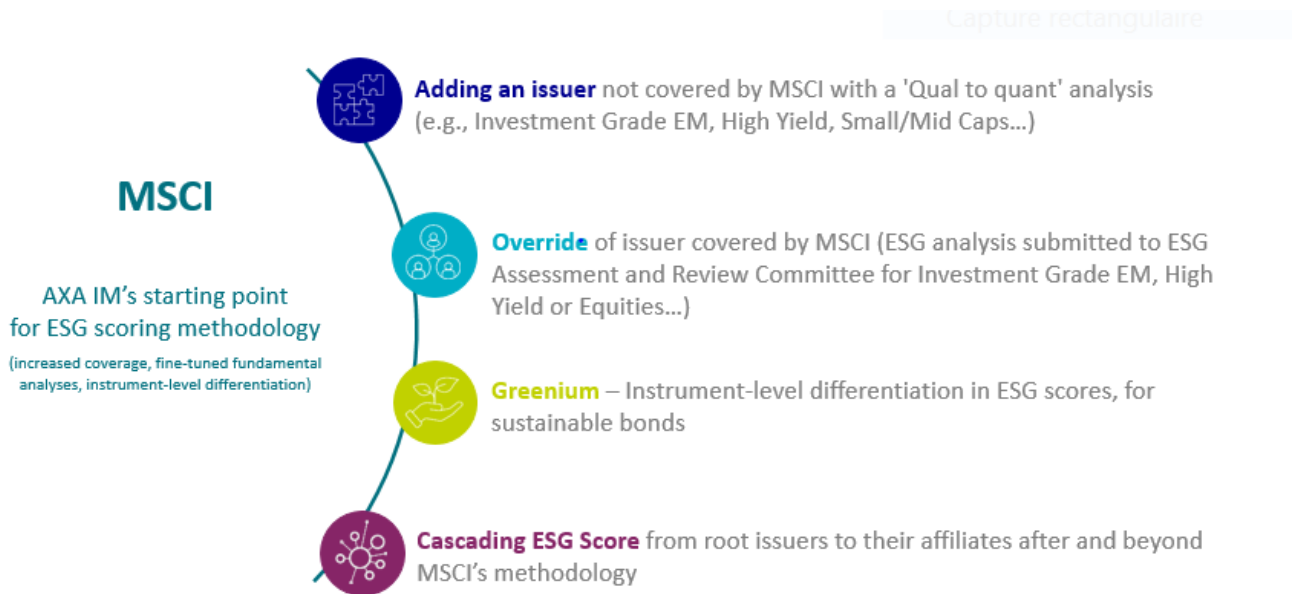
Since 2021, AXA IM Core moved from a "blended score" which was an aggregation of KPIs from different providers to a structured score called Q² (which stands for Qual and Quant). Using the MSCI ESG scoring model as the starting point, the Q² methodology allows to increase the coverage provided by MSCI as when MSCI doesn't provide a rating for an issuer, AXA IM ESG analysts can provide a documented, fundamental ESG analysis, which in turn will be transformed into a quantitative ESG score following MSCI pillars aggregation methodology and scores normalization, such coverage-enhancing ESG scores are referred to as "qual-to-quant".

Second, when MSCI does cover an issuer but AXA IM's ESG analysts disagree with MSCI's ESG assessment (for example because the assessment is based on scarce and/or outdated data), a documented, fundamental ESG analysis can be submitted to the peer review of the ESG Monitoring & Engagement (ESG M&E) Committee; if the ESG M&E Committee validates the analysis, it will be transformed into a quantitative ESG score and will replace the existing, previously prevailing MSCI score. Third, in the fixed income space, Q² will keep an instrument-level differentiation in ESG scores with a ESG score premium for sustainable bonds (green, social and sustainability bonds) for which AXA IM's analysts (in Core Sustainability Investments team) have a documented, fundamental

⁴ Berg et al. (2022), Aggregate Confusion: The Divergence of ESG Ratings, Review of Finance, Volume 26, Issue 6, November 2022, Pages 1315–1344, <https://doi.org/10.1093/rof/rfac033>

⁵ For AXA IM funds that have been awarded with sustainable labels, the rationale for using AXA IM Q² ESG scoring methodology is detailed in AXA IM dedicated Sustainable Labels policy (covering Label ISR, Label Greenfin and Towards Sustainability Label), which is available on AXA IM website: [Sustainability Policies and Reports | AXA IM Corporate \(axa-im.com\)](#)

positive or neutral opinion. Finally, AXA IM will keep “cascading” ESG scores from root issuer to its affiliates after and beyond what MSCI does in this respect.



Source: AXA IM, 2024. For illustrative purpose only.

MSCI scores are used as a starting point, for corporates and for sovereigns, which enables Q² to provide consistent ratings between the two asset classes. MSCI scores range from 0 to 10.

MSCI corporate ESG methodology covers more than 10000 companies by assessing thousands of data points across 33 ESG key issues (see full list below), focusing on the intersection between a company's core business and the industry issues that can create significant risks and opportunities for the company. Companies are rated on a AAA-CCC scale relative to the standards and performance of their industry peers. These 33 key issues are selected annually for each industry and weighted.

In its [ESG scoring methodology](#), MSCI identifies key issues per sector, for each GICS® sub-industry, on the environmental and social pillars through several scenario analysis including the analysis of companies' business model considering, among other things, their geographical localization, their operations, their activities and if they operate in several industries, their supply chain. Then, those key issues are weighted according to i) the industry's contribution – relative to all other industries – to the negative or positive impact on the environment or society, and ii) the timeframe in which MSCI expects the related risks or opportunities for the industry's companies to materialize: it corresponds to the ESG Industry Materiality Map set by MSCI. For each company, based on the environmental and social externalities identified at a sectorial level, MSCI identifies several environmental and social key issues which could generate unanticipated costs. On the governance part, all companies are assessed on six governance key issues. These ESG scores are then reviewed periodically by MSCI, and in the event of emergence of controversies or governance events, it may lead to the interim updating of the ESG rating components by MSCI. The MSCI ESG Industry Materiality Map is available here: [ESG Industry Materiality Map - MSCI](#).



Source: MSCI, 2024.

To arrive at a final ESG Rating, the weighted average of individual Key Issue Scores is normalized relative to ESG Rating Industry peers. After any committee-level overrides are factored in, each company’s Final Industry-Adjusted Score corresponds to a rating between best (AAA) and worst (CCC). These assessments are not absolute but are explicitly intended to be interpreted relative to a company’s industry peers.

Identified “key issues” are industry-specific environmental, social and governance externalities that may impact a company or industry. MSCI ESG Rating methodology identifies 33 key issues within the three ESG pillars (see on graph below) comprising 5-30% of the total ESG Rating:

- To arrive at a final ESG Rating, the weighted average of individual key issue scores is normalized relative to MSCI ESG Rating Industry peers;
- The weightings consider both the contribution of the industry, relative to all other industries, to the negative or positive impact on the environment or society; and the timeline within which we expect that risk or opportunity for companies in the industry to materialize;
- The framework is such that a key issue defined as “High Impact” and “Short-Term” would be weighted three times higher than a key issue defined as “Low Impact” and “Long-Term”;
- Level of contribution to social or environmental externality: similar to the process outlined above, each GICS (Global Industry Classification Standards) Sub-Industry is assigned a “High”, “Medium”, or “Low” impact for each key issue based on MSCI analysis of relevant data (e.g., average carbon emissions intensity);
- Expected time horizon of risk / opportunity: The time horizon of each key issue (Short-Term, Medium-Term, Long-Term) is classified based on the type of risk or opportunity that each key issue presents to companies;

- The Governance pillar weight has been determined assuming a “High Contribution/Long Term” and “Medium Contribution/Long Term” assessment on Corporate governance and Corporate behaviour respectively across all sub-industries. Additionally, the weight on the Governance pillar will be floored at a minimum value of 33%;
- The Risk exposure score and Risk management score are combined such that a higher level of exposure requires a higher level of demonstrated management capability in order to achieve the same overall key issue score;
- A controversy penalty if it is judged to pose material risks can be applied to the key issue score. A controversy case that is deemed to indicate structural problems that could pose future material risks for the company triggers a larger deduction from the key issue score than a controversy case that is deemed to be an important indicator of recent performance but not a clear signal of future material risk.

Lastly, the ESG Adjusted Score is mapped to a letter rating as follows:

Letter Rating	Leader/Laggard	Final Industry-Adjusted Company Score
AAA	Leader	8.571* - 10.0
AA	Leader	7.143 – 8.571
A	Average	5.714 – 7.143
BBB	Average	4.286 – 5.714
BB	Average	2.857 – 4.286
B	Laggard	1.429 – 2.857
CCC	Laggard	0.0 – 1.429

Source: MSCI, 2024.

If the Industry Minimum Score is greater than 4, it is truncated at 4, this could result in no companies in that industry receiving a CCC rating, whereas if the Industry Maximum Score is less than 6, it is truncated at 6, resulting in that no companies could receive a AAA rating.

Small and mid-caps corporates ESG rating

Since early 2023, to enhance our ESG database for small- and mid-cap companies that are not in the MSCI universe, we use EthiFinance’s ESG Ratings database to build a score we also use an ESG rating provided by EthiFinance. It relies on 39 raw ESG KPIs sourced from Ethifinance. 46 raw scores and two raw scores were selected from the EthiFinance and S&P Trucost databases respectively. The following process has been followed:

- Step 1: the data are gathered and normalized depending on its nature (text, numeric);
- Step 2: the data are injected into EthiFinance’s ESG Ratings universe and processed, the pillars E, S and G are then deduced from the MSCI materiality map;
- Step 3: the data are further processed using the universe statistics of MSCI on peer sectors.

Leveraged loans and other private debt ESG rating

Since early 2023, we rely on Octus’ solution for CLO managers, FinDox, to provide us with ESG data on leveraged loan issuers. Data is then used to compute the ESG rating, based on our internal methodology. This specific ESG scoring methodology relies on the same framework as MSCI: 3 pillars, 10 themes and 33 key issues. The KPIs collected by FinDox on each issuer are mapped to MSCI’s 33 key issues. Among the data collected by FinDox, we selected 55 KPIs to perform the ESG scoring with each answer to these KPIs rated on a scale from 0 to 10 based on our proprietary scoring model⁶. The final ESG score is computed as the weighted average of the pillars scores using the MSCI sectoral weights. The controversy level of the issuer is also evaluated by FinDox.

⁶ Detailed list of indicators and criteria available upon request.

As ESG assessment is relatively new in this asset class, disclosure for some issuers is very low, therefore we add bonus/malus scores for a few important KPIs on which coverage remains limited. This penalty or reward also helps communicating to the loan market, the importance of looking at all these topics while it is at the start of these ESG considerations.

Green, social and sustainability bonds (GSSBs) rating

A specific methodology for green, social and sustainability bonds (GSSBs) has been designed to include the bonds' qualitative assessment made by analysts within the Core Sustainability Investments team – relying on AXA IM GSSB framework⁷ – into the Q² scoring framework. We first rely on the issuer's MSCI ESG score first before integrating qualitative opinion based on AXA IM GSSB framework which is translated into a premium at the GSSBs instrument level, whether it is a corporate or sovereign bond, to produce an enhanced ESG score for GSSB issuances. Thus, the scores given to these instruments are also a combination of both quantitative and qualitative assessments. The ESG score of the bond can either be the same as its issuer or get a bonus depending on the qualitative assessment, only when the opinion is neutral or positive.

Such approach allows us to differentiate these GSSBs bonds from conventional bonds through ESG scoring and to favour investments participating in climate and social transition.

Sovereigns scoring methodologies (AXA IM Core)

Sovereign assets ESG rating

MSCI ESG Government Ratings covers 198 countries and regions and provides ratings on more than 99 percent of outstanding sovereign debt in the marketplace, and identifies 27 key issues for sovereigns within the three ESG pillars (see on graph below), and reflect how countries' exposure to and management of environmental, social, and governance risk factors may affect the long-term sustainability of their economies:

- The weight of an ESG pillar is determined after assessing the impact of that pillar on the long-term competitiveness over the short, medium and long term;
- Expected time horizon of risk / opportunity: time horizon of each key issue (Short-Term, Medium-Term, Long-Term) is classified based on the type of risk or opportunity that each key issue presents to the countries;
- The Governance pillar weight is assigned a higher weight (50%) than the Environmental and Social pillars (25%) as governance offers the most dynamic ways to influence the management of environmental, social and institutional risks;
- The Risk exposure score and Risk management score are combined such that a higher level of exposure requires a higher level of demonstrated management capability in order to achieve the same overall key issue score. Within this approach, a country's Government ESG score is constrained by its Risk management score.

⁷ AXA IM GSSB framework is available on AXA IM Core website: [Green Bonds | AXA IM Core \(axa-im.com\)](https://www.axa-im.com/en/green-bonds)



Source: AXA IM, MSCI, 2024.

Public agencies ESG rating

Selected government agencies with a similar risk profile to the sovereign entity are mapped to the Sovereign rating provided the issuer meets the following criteria:

- Agency is owned, guaranteed, or sponsored by rated sovereign entity;
- Agency does not fall into any of the following categories:
 - Utility;
 - Bank;
 - Industrial (e.g., Transportation, Energy, Consumer Services).

Public agencies falling into any of these categories are subject to the MSCI ESG Intangible Value Assessment (IVA) (i.e., following the Corporate rating approach) and will not be mapped to the sovereign issuer’s ESG rating.

Supranationals ESG rating

Selected supranationals classified as “Supranational Administrative Bodies” receive the weighted average scores and ratings of their underlying sovereign shareholders, weighted by the contribution or ownership of each sovereign to the underlying supranational. Unrated sovereigns contributing less than 5% to the overall entity are excluded from consideration.

Other supranationals categorized as “Multilateral Development Banks” are subject to the MSCI ESG IVA as well and are not neither mapped to the underlying sovereign issuers’ ESG rating, although country-level assessments are considered in the overall

assessment of the institution alongside institution-level assessments of issues such as governance, transparency, accountability, and the environmental impact of financing.

GSSBs issued by sovereign issuers ESG rating

The ESG score of a green, social and sustainability bond issued by a sovereign issuer is a combination of the country's ESG score and an opinion given by our dedicated analysts within the Core Sustainability Investments team on the bond. They assess 4 pillars:

- The ESG quality and strategy of the issuer;
- The use of proceeds and the process for project selection;
- The management of proceeds;
- The impact reporting.

Depending on their assessment of these 4 pillars, the RI analysts will either give a positive, neutral or negative opinion on the bond. The bond will then be attributed a bonus on the pillar concerned (E for green bonds or S for social bonds) or on both the E and S pillars for sustainability bonds or will keep the issuer's ESG score if the opinion is negative.

Other ESG KPIs for Sovereigns

In addition to the Sovereign ESG rating, we closely follow some KPIs corresponding to each E, S and G pillar for issuers mapped with the Sovereign ESG rating. They are the ones that are indicated in the below table. The data used for these KPIs either come from the World Bank, the World Economic Forum, or the World Health Organization.

E	Carbon intensity
	Energy intensity
	Water intensity
S	Government expenditure on education
	GINI index
	Healthy life expectancy
	Youth unemployment
G	Control of corruption
	Global competitiveness rank
	Political stability

Source: AXA IM, based on MSCI, 2024.

Real assets scoring methodologies (AXA IM Alts)

Real estate direct property ESG rating

The real estate direct property ESG rating is a proprietary tool, initially developed in 2016, in line with various sectoral benchmarks, such as building certifications (*e.g.*, BREEAM in use) and GRESB, to integrate the expectations of the AXA IM's main stakeholders and to guarantee the coherence of actions carried out at asset level.

First, a preliminary ESG score is calculated at the time of acquisition, noting that many assumptions may be made as data availability is usually limited. Once under management, asset managers are responsible for undertaking an annual review and update the ESG score for the asset within our dedicated ESG data management platform. This assessment enables us to review the performance of

an asset relative to AXA IM's portfolios at sector and country level, and establish short-, medium- and long-term action plans to improve their ESG performance.

Methodology

The ESG rating methodology for real estate assets has been developed around 3 pillars: Environmental (E), Social (S) and Governance (G), each covered by dedicated indicators. The assessment is linked to the performance of a building over a defined period. It uses actual consumption data collected by the property managers in the data management platform to measure energy (electricity, gas, district heating) and water consumption.

The rating out of 100 (reduced to a score out of 10) takes into account a weighting of each criterion according to the importance of the issue in relation to AXA IM Alts' ESG policy and the manager's levers for action, while respecting the requirements of the SRI label. In line with AXA IM Alts' ESG strategy, environmental criteria play a predominant role in the rating, representing 60% of the total score. Social and governance criteria represent an equivalent weighting of 20% each.

For quantitative questions related to energy (electricity, gas, district heating) and water consumption, the grid uses actual consumption data collected by the property managers in the data management platform to measure these environmental indicators. AXA IM Alts does not use sector averages or estimates to assess the ESG performance of its assets.

Recent updates

The ESG scoring grid was first reviewed in 2021, with the addition of some themes (*e.g.*, climate resilience, impact on local communities, biodiversity), to reflect the growing importance of these themes in AXA IM Alts' sector benchmarks and stakeholder expectations leading to a new total of 25 questions summing up to a total of 100 points. The final score is calculated out of 10. In total, 12 new questions have been added compared to the 2016 grid and 2 questions have been deleted or substantially changed. Some themes have been added (*e.g.*, climate resilience, impact on local communities, biodiversity), to reflect the growing importance of these themes in AXA IM Alts' sector benchmarks and stakeholder expectations. The questions also require more precise answers (*e.g.*, details of measures in place in the building) to allow for more accurate monitoring and reporting over time.

The following update was conducted in 2024, following a stabilization period for proper integration by AM teams, this update is now more incremental, focusing on leveraging ESG data maturity, adapting to the evolving landscape of responsible investment and internal priorities, utilizing feedback to enhance scoring consistency, and better accommodating the specificities of non-EU countries. An impact analysis revealed a limited negative effect on scores while significantly improving the overall methodology with this updated scoring will become effective as of 2025.

Scope

All properties under direct management by the real estate asset management team within AXA IM Alts are subject to an ESG score at the time of acquisition and while under management (parking, plot of land and assets under development are out of scope).

The rating has been developed to address the specificities of all real estate asset classes (residential, office, hotel, etc.) and their geographic locations, and considers all uses per asset, beyond the data and information for which AXA IM Alts, which encompasses the activities of AXA REIM SGP SA, exercises control.



	Category	#	Question	Total weight
ENVIRONMENT	ENERGY	1	What performance level is this building achieving, under the local energy scheme?	60%
		2	Is energy consumption data collected automatically and regularly?	
		3	What is the annual final energy consumption of the whole building?	
		4	Which energy efficiency measures are implemented on the building?	
	CARBON	5	Is (part or all) the building's electricity consumption provided by renewable energy sources?	
		6	What is the main energy source of heating the building?	
		7	Have you set a greenhouse gas emissions reduction plan to align the asset's GHG emission intensity with the CRREM 1.5°C trajectory?	
		8	Does the building enable the use of low carbon transport?	
	WATER	9	How has the annual water consumption of the building evolved?	
		10	Which measures are in place to reduce water consumption in the building?	
	WASTE	11	Is the amount of waste produced in the building recorded and uploaded to Deepki?	
		12	Are a waste sorting facility or a waste recovery or recycling contract in place in the building?	
		13	Which measures are in place to optimize waste management?	
	BIODIVERSITY	14a	Has a biodiversity risk assessment been conducted?	
		14b	Which measures are in place to generate positive contribution to biodiversity?	
CERTIFICATION	15	Does the building have a valid third-party independent sustainability certification?		
	15b	Have other environmental certifications been obtained for your building?		
SOCIAL	COMFORT AND WELL BEING	16	Which measures are in place to evaluate the comfort and wellbeing of the tenants?	20%
		17	Which measures are in place to improve the comfort and wellbeing of the tenants?	
	ENGAGEMENT	18	Are ESG clauses (or green lease) included in the building's lease contracts?	
		19	Which measures are in place to engage with the tenants?	
		20	Which measures are in place to contribute to the social and economic development of the local community?	
GOVERNANCE	ACTION PLAN	21	Is there an action plan in place to improve the ESG performance of the building?	20%
	RESPONSIBLE PROCUREMENT	22	Is there an RFP process in place for all service providers operating on the asset?	
		23	Are sustainability clauses included in contracts with service providers?	
		25a	Are risk management measures in place to adapt to the impacts of natural catastrophes and climate change?	
		25b	Are measures in place to adapt to the impacts of climate change?	

Source: AXA IM, 2024.

Commercial real estate (CRE) debt ESG rating

Non-financial criteria are taken into consideration during the due diligence and investment committee process at the time of acquisition. A scoring methodology specific to the asset class was developed in 2016 for the purpose of providing an ESG score to all portfolios' underlying assets.

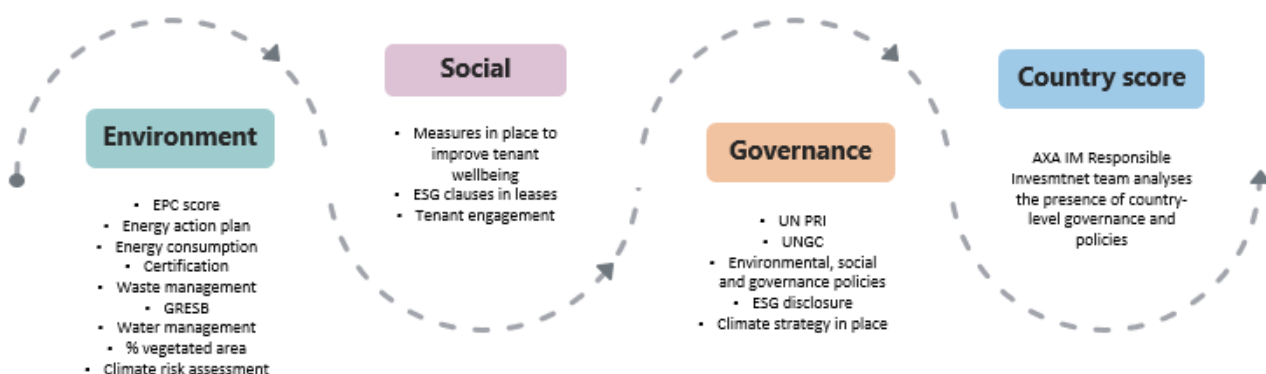
In 2023, the CRE debt ESG rating tool was enhanced to reflect the changing risks and take into consideration the most relevant ESG indicators for the asset class. The enhanced ESG rating methodology aims at helping the portfolio management team with investment selection while serving simultaneously as a data collection and a progress monitoring tool for the loans that are held in portfolio.

The CRE debt ESG rating tool emulates the approach in place on the real estate equity side, analysing key environmental and social criteria and KPIs of the underlying real estate assets to determine relative ESG performance at the assets and project level. It is carried out using answers provided by the loan sponsor, the ultimate owner of the underlying asset, to a comprehensive ESG survey that is sent to them pre-investment and on an annual basis. Analysts are however encouraged to challenge that information whenever possible based on available data. Please bear in mind that sometimes assumptions are made, and proxy data used to circumvent data scarcity at the underlying asset level.

The enhanced ESG rating tool has a total of 22 indicators 8 (up from 14 in the previous iteration); 16 mandatory criteria are assessed at the asset level and 6 at loan sponsor level to rate investments on a scale from 0 (worst) to 10 (best). Additionally, nine optional criteria are covered in the ESG survey to capture project's credentials on more challenging ESG topics such as building's decarbonization strategy alignment with CRREM pathways or assets' contribution to biodiversity loss for instance. Each mandatory indicator has a list of possible responses allowing us to determine a score.

Due to the nature of the asset class (*i.e.*, debt) and the standard holding period (3-5 years on average), there are limitations as to the ability to effect meaningful change in the underlying asset ESG performance. However, to actively manage the level of underlying assets sustainability risk within the CRE debt portfolio, the investment teams adjust the ESG scoring annually for any improvement or deterioration in the project or sponsor ESG credentials.

If such sustainability risks materialize in respect of any investment, they may have a negative impact on the financial performance of the relevant investment. AXA IM does not guarantee that the investments are not subject to sustainability risks to any extent and there is no assurance that the sustainability risks assessment will be successful at capturing all sustainability risks at any point in time. Investors should be aware that the assessment of the impact of sustainability risks on the performance is difficult to predict and is subject to inherent limitations such as the availability and quality of the data.



Source: AXA IM, 2023.

⁸ Detailed list of indicators and criteria available upon request.

Real estate platform companies ESG rating

The Real Estate platform's ESG rating is derived from the CRE debt rating taking into account platform specificities. The format facilitates annual engagement and monitoring of the underlying asset as well as the company's ESG management which is important for ongoing disclosures. The granularity enables nuanced insights when considering investing (based on the company responsiveness and ability to report) and the growing importance of reflecting those assets which are committed to net zero trajectories.

A key difference is that for the Governance section, the platform is rated (and not the underlying assets individually). This since to the contrary of a direct equity investment, the asset manager is not involved in any direct decision-making process.

	Category	Indicator	Total weight
ENVIRONMENT	Energy	EPC Score	60%
		Energy action plan	
		Energy consumption	
	Certification	Environmental certification – Level	
		Environmental certification - % of assets	
	Carbon	Clean transportation score	
		Renewable energy	
	Risk management	Heating system (fossil fuel)	
		Physical risk (AXA UW Tool)	
	Waste	Waste measures	
Water	Water measures		
SOCIAL	Comfort & Wellbeing	Measures in place	20%
	Engagement	ESG clauses	
		Engage with tenants and community	
GOVERNANCE	Gender inequalities	Gender pay gap	20%
		Gender board diversity	
	Policies	ESG policies	
		Climate strategy	
	Transparency & disclosure	UNGC guidelines breach	

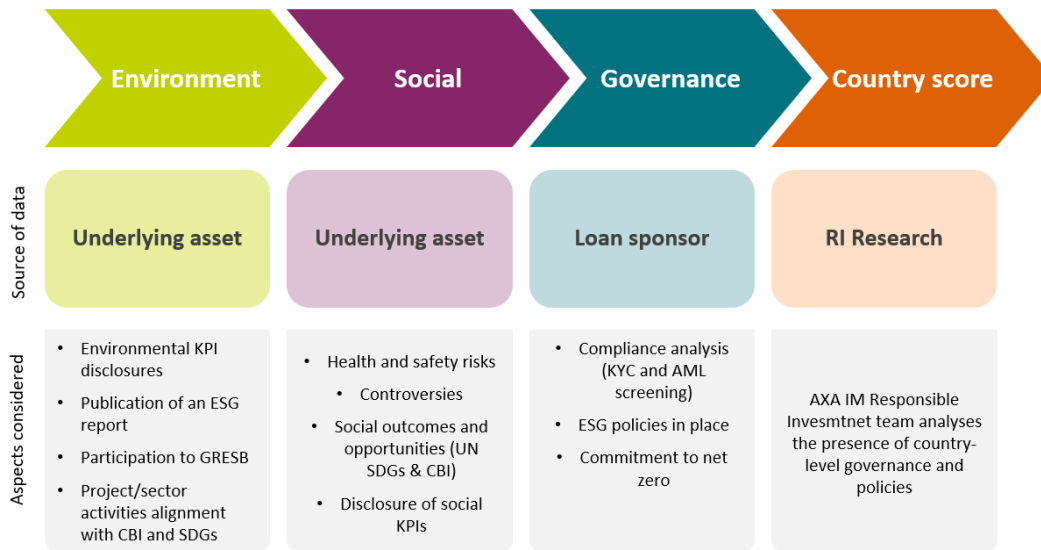
Source: AXA IM, 2024.

Infrastructure debt ESG rating

A proprietary ESG risk rating methodology specific to Infrastructure Debt portfolio underlying investments was developed in 2017 for the purpose of providing an ESG risk assessment to all projects financed during the due diligence phase. The rating was enhanced in 2023 to better align with best market standards and extend the consideration of extra-financial criteria to the full investment cycle, from the investment universe' screening to the due diligence phase, all throughout the holding period.

It is a tool developed by AXA IM to integrate material ESG factors relevant to infrastructure debt investors and aligned with well-established frameworks such as CBI Taxonomy, EU Taxonomy, SFDR, UN SDG, GRI, ICMA, TCFD and SASB.

It has been constructed around 3 pillars: Environment (E), Social (S) and Governance (G), each covered by dedicated factors and indicators. The rating is based on a questionnaire that asks borrowers 18 questions to thoroughly assess ESG risk exposure and evolution throughout the investment cycle and align with the reporting requirements under SFDR and Article 29 disclosure regulation (PAIs, including carbon emissions, etc.).



Source: AXA IM, 2023.

To assess the environmental and social score of the transactions, our investment teams will take into account:

- Activity's alignment with the Climate Bonds Initiative;
- Alignment with environmental-related UN Sustainable Development Goals;
- Disclosure of environmental KPIs (e.g., annual GHG emissions emitted);
- Environmental risk assessments performed;
- The publication of an ESG/environmental report;
- Specific covenants related to environmental topics;
- Participation to GRESB;
- Certification of the project by a recognized entity (BREEAM Infrastructure, SuRe, HQE infrastructure etc.);
- Social risks and opportunities aligned with the Climate Bonds Initiative;
- Disclosure of social KPIs;
- Provision of services to underserved populations;
- Specific health and safety risks.

To complement the performance assessment of Project E and S, indicators for the G components at the loan sponsor level are also taken into account. These include:

- Public charter engagement (UN PRI signatory, UNGC signatory);
- Compliance analysis (KYC and AML screening, World Check database screening);
- Governance policies in place for human rights, including labor rights, bribery/corruption, taxation, and fair competition;
- Environmental and/or social policy;
- Participation in infrastructure specific ESG initiatives (IPFA/LTIIA/GII);
- Commitment towards Net Zero.

These information help determine the overall ESG score of the project (out of 10), along with separate scores for the E, S, and G pillar (also out of 10). The overall ESG rating serves as an informative indicator of the underlying ESG performance and sustainability risk and provides a solid basis to compare the ESG credentials of a wide range of investments across different infrastructure sectors, as well as deeper insights into each investment's idiosyncratic ESG risks.

Infrastructure equity ESG rating

A proprietary ESG rating methodology for Infrastructure Equity portfolio's underlying investments was developed in 2021, and subsequently updated in 2024 to provide an objective assessment of infrastructure companies' ESG performance and enhance ESG risk management. The rating was built by incorporating a comprehensive set of material ESG factors specifically for Infrastructure Equity investors, with a strong emphasis on the double materiality risk approach. Furthermore, it evaluates risks at Investee company level through the perspective of thorough risk management covering all the steps from ESG risk identification, assessment, mitigation, monitoring to ESG risk disclosure. Carrying out this in-depth assessment enables a precise ESG risk evaluation both before investment and throughout the holding period, while also distinguishing between comparable assets to identify ESG Leaders vs. Laggards.

The ESG rating of each investee company is updated annually, with the data collection process repeated each year to monitor improvements in ESG performance, identify any deterioration in ESG risk profile and adjust bespoke ESG action plans for each investee company.

The ESG rating for Infrastructure Equity investments covers 16 material ESG themes, 26 sub-themes and is supplemented by a questionnaire of 42 questions that is circulated directly to each investee company at due diligence and thereafter on annual basis. It results in a final score out of 10 for each investee company, along with a separate analysis of the scores for each E, S, and G pillar, also out of 10.

Topics covered in the ESG rating include:

- Alignment with the Climate bond initiative taxonomy, EU taxonomy and the UN SDGs
- Clean Energy & Energy savings
- Water conservation
- Waste management and circularity
- GHG emission and decarbonization
- Climate risk and resilience
- Biodiversity preservation
- Social outcome and opportunities with the climate bond initiative taxonomy
- Target Population
- Gender Diversity
- Health and Safety
- ESG initiatives Supply Chain
- Employee wellbeing
- Controversies & ESG compliance
- ESG leadership and board governance
- Business Ethics

The overall ESG rating serves as an informative indicator of the underlying investee company's ESG performance, provides a solid basis to compare the ESG credentials of a wide range of investments across different infrastructure sectors, as well as deeper insights into each investment's idiosyncratic ESG risks.

Other alternative credit & private debt scoring methodologies (AXA IM Alts)

Since 2021, ESG rating has been adapted to **Alternative credit specificities** in assessing country/collateral, counterparty and asset/project factor depending on the expertise as follows:



Source: AXA IM, 2023.

Proprietary methodologies capturing other asset classes specificities through quantitative and qualitative assessment have been developed in 2021 for Collateralized loans obligations (CLOs), Insurance-linked securities (ILS), Synthetic Risk Transfers (SRTs), Asset-backed securities (ABS), Mortgages and Non-performing loans (NPLs).

CLOs ESG rating

We have created a proprietary methodology to assess ESG risks for new CLO investments. Both the CLO manager and the CLO portfolio are examined, which allows us a **dual and dynamic approach**.

The CLO manager score targets the seriousness of the CLO manager (not only when contemplating loan investments) and its ESG approach completed with calls/meetings dedicated to ESG. It allows incorporating the importance of reinvestment scheme in CLOs: a portfolio can be currently built with no strong attention for ESG but being managed by a CLO manager strongly committed to apply a solid ESG approach going forward.

We complement the analysis with questions directly focusing on loan investments which allows us to build a Portfolio score focusing more effectively on ESG rules regarding loan pools. The portfolio score assesses **the accuracy of ESG criteria for the CLO manager when selecting loans**. This approach still mainly relies on the CLO manager actions and convictions.

The portfolio score and the CLO manager score both lead to a **global ESG score** for the CLO.

ILS ESG rating

We assess the 3 ESG pillars: Environment, Social and Governance using data related to the 3 key components of an ILS structure: Collateral, Sponsor and Ultimate beneficiary.

Regarding **Collateral score**, the scoring is performed by our Responsible Investment (RI) team for all the collaterals. We currently have an ESG rating for all our collaterals.

The **Sponsor score** is assessed by our RI team as well. However, for some counterparties, we currently do not have any rating that is the reason we have defined an ESG questionnaire for our counterparties (sponsors). This questionnaire serves as a basis to the assessment when there is no internal rating. We also base our research on an external provider, MSCI, to complete the assessment.

Finally, we estimate the **Ultimate beneficiary score** through the answers to a dedicated questionnaire which is sent to the sponsor. The ultimate beneficiary in ILS deals is usually different than the sponsor and might be difficult to know. Regarding this assessment we focus mainly on the Environment and Social pillars with limited questions on the “Governance” component.

When assessing the ultimate beneficiary score, we are trying to know who will get the cash at the end if there is an event:

- Are we hedging ultimately some corporates involved in the coal, tar sand... industries? We want to be more in line with the exclusion lists at the sponsor level by putting some penalties on these industries without having a real exclusion like for the sponsor;
- Are we covering low-income or green insurance policies? We want to add more value on the deals such as those covering some developing countries.

AXA IM’s proprietary ESG framework is based on the most relevant and material ESG risks and opportunities identified for ILS. Each component (collateral, sponsor & ultimate beneficiary) uses different weightings to reflect the accuracy of the underlying investment.

These indicators help to determine the **overall ESG score**, ranking from 1 to 10, of the project which serve as informative indicators of underlying ESG performance and complement the sustainability risks analysis.

RegCap ESG rating

In RegCap investments, **the originating bank** generally designates a systemic commercial bank which sources and underwrites exposures included in the initial portfolio and replenishments. The originator is responsible for workout process when defaults occur and is the counterparty of the protection agreement and often the recipient of the deal cash collateral.

The underlying portfolio designates the portfolio structure we invest in: it sits on from the originator’s balance sheet and comprises between hundreds to thousands of underlying exposures. AXA IM’s proprietary ESG framework is based on the most relevant and material ESG risks and opportunities identified for RegCap investments: our methodology to assess ESG risks for RegCap investments is based on research from internal and external data providers and each new investment undergoes a specific **ESG questionnaire-based analysis** sent to our counterparties (originator).

In RegCap investments, each transaction is categorized through **an assessment of the originating bank** which focuses more effectively on ESG rules of the bank issuing the portfolio. This ESG assessment can be made either if the bank is already **rated by RI teams**, with an unadjusted ESG score split by E, S and G components, or if the originating bank has not yet been rated, we send it a **corporate ESG questionnaire**. The answers are then subjected to “fact checking” in order to investigate the effectiveness of the declared ESG processes and rules. To conclude this analysis, we attribute an **ESG score**, ranking from 0 to 10, which composes 50% of the transactions’ ESG total score.

Regarding the Underlying Portfolio assessment, we focus on the Originating Bank’s ESG policies and exclusions in its **underwriting process** through the sending of an **underwriting questionnaire** and on a country score based on an external provider, MSCI, country-data if the underlying portfolio is mono country. Once received, the results of the ESG questionnaire are analyzed by our teams, with “**fact checking**” involved. We ask for examples and/or toolkit from originator to assess the seriousness of their declared ESG processes. An **ESG score** is then attributed based on these elements, which composes **50% of the transaction’s final ESG score**.

Those 2 individual ESG studies are then compiled into a **global ESG score** ranking from 1 to 10 for the RegCap considered transaction.

ABS, Mortgages & NPLs ESG rating

AXA IM ABS, mortgages and NPL team decomposes its investment universe into three categories: **Counterparty, Asset** and **Country**. We assess the ESG pillars: E, S and G using data related to these 3 categories. Our methodology to assess ESG risks for ABS,

mortgages and NPL is based on research from internal and external data providers (such as counterparty, country or portfolio assessment). Each new investment undergoes an **ESG analysis**.

Taking into account the abovementioned general exclusions, AXA IM ABS, mortgages and NPL team then categorize all new potential investment through a **Counterparty assessment**. This assessment relies on either an ESG questionnaire sent by the investment team or on the ESG counterparty indicators performed by AXA IM RI teams when available.

As a key element of the securitization, **Assets** attract a large weight in the AXA IM ESG framework. Assets are valued based on portfolio data and during the due diligence process considering the specificity of each expertise (ABS, mortgage or NPL).

Country-related indicators form parts of the asset analysis and are based on data from an external provider: MSCI. The country score captures macro risks following the three ESG pillars.

AXA IM's proprietary ESG framework is based on the most relevant and material ESG risks and opportunities identified for ABS, mortgages and NPL. Each expertise (ABS, mortgages & NPL) uses different weightings for counterparty, asset & country to reflect the accuracy of the underlying investment.

These indicators help to determine the **overall ESG score** ranking from 1 to 10, of the project which serve as informative indicators of underlying ESG performance and complement the sustainability risks analysis.

We produce on an annual basis an ESG Dashboard at AXA IM level aiming to summarize asset classes' contributions to the global ESG score. Using the Q² methodology, the dashboard below is based on AXA IM worldwide holdings' but specifically focuses on traditional asset classes – equities, sovereign bonds and corporate bonds – at the end of year 2022⁹.

Other scoring methodologies for private markets & hedge funds (AXA IM Prime)

For investments in primary funds, a dedicated methodology was developed and is based on relevant industry frameworks such as the UN PRI, Invest Europe and the SFDR regulation.

The ESG assessment relies on answers provided by the fund manager to an ESG questionnaire divided in two parts:

- i) the fund manager as a company (firm responsibility), assessing the firm's ESG governance and policy, and specific environmental, social and governance practices;
- ii) the specific fund in which the investment is made (fund responsibility), assessing the integration of ESG in the investment cycle (pre-investment, ownership, transparency).

A separate ESG score is calculated at each level, and is ranked from 1 to 10.

The output of the ESG assessment is threefold ensuring the investment's compliance with i) AXA IM sectorial exclusion policies, ii) minimum ESG criteria, and iii) minimum ESG score (both at firm and fund level).

A dedicated approach with separate questionnaires was developed for secondaries and co-investments to account for the specificities of such investments.

For all investments, the ESG assessment is conducted pre-investment and updated on an annual basis during holding.

⁹ Worldwide holdings include the assets managed by AXA IM Paris SA.

Other scoring methodologies for multi-manager investments (AXA IM Select)

AXA IM Select has developed ESG qualitative scoring frameworks both at firm and fund levels.

The ESG Due Diligence process is a mandatory part of the investment process at AXA IM Select, in which we qualitatively assess firms and underlying funds' RI credentials using proprietary assessments which results in a RAG rating for firms and an ESG score for each fund. We apply stringent minimum thresholds to ensure our portfolios consist of funds / mandates that are less likely to be exposed to not managed ESG risks and where applicable make positive contributions to environment and society. These are the potential pitfalls that wouldn't be identified by traditional financial analysis alone. The purpose of these scores is to provide managers with information about the ESG quality of mutual funds, in order to seek to improve the ESG footprint of offerings where possible.

The ESG Due Diligence is undertaken in two parts: the ESG Operational Due Diligence (ODD) assessment which is focused at firm level and ESG Investment Due Diligence (IDD) assessment focused at fund level:

- ESG ODD assessment at firm level: The areas covered include policies, firm level processes, governance, training, Key Performance Indicators (KPIs) and firm level commitments. It is a self-assessment so firms are provided an ESG specific questionnaire as part of the overall ODD process which they complete and submit along with any evidence requested, such as their policies. Depending on the responses, the AXA IM Select ODD team can choose to follow up with a discussion with the firm being assessed. The responses are assessed and a RAG rating outcome is finalised. Amber and Green rated firms' funds are eligible for investment. However, red rated firms' funds are considered ineligible for investment (unless there is a reasonable case for an exemption from this rule which would go through approval at the Responsible Investment Forum) and the firm cannot be used for any delegated mandates. Red rated firms can be those without an RI policy or without a dedicated RI resource or with unsatisfactory ESG integration at firm level. The list of firms and their latest assessment outcomes are stored on an internal Sharepoint for the investment team to access. The assessment is refreshed at least every two years. On an ongoing basis Asset Managers are monitored in the media for possible adverse news with regards to their commitment to ESG initiatives and involvement in greenwashing practices;
- ESG IDD assessment at fund / mandate level: This is a qualitative self-assessment of funds or mandates based on a questionnaire completed by fund managers and comprises of three scored sections that have their own weights and cover the following areas specifically at fund level:
 - ESG integration that includes ESG approach, Evidence of implementation of ESG approach and any consideration of impact;
 - Engagement and stewardship that includes Engagement framework, how engagement is tracked and success measured and evidence of active ownership effecting investment decisions;
 - Risk and reporting includes ESG risk monitoring, ESG KPIs, ESG reporting and consideration of climate risk and biodiversity;
 - The output of the assessment is an ESG score awarded to each fund / mandate. Currently the total score is out of 5, however this is subject to change. ESG score thresholds are defined which all funds / mandates – new and invested – must meet in order to be eligible for investment and if an invested fund / mandate's score drops below the ESG Score threshold, there is an escalation process defined which can ultimately lead to removal from approved buy lists.

There are two ESG scoring thresholds used at AXA IM Select currently – one for SFDR Article 6 and Article 8 funds / mandates and one for SFDR Article 9 funds / mandates. The assessment is mandatory for all new and invested funds / mandates and the due diligence is carried out as part of the wider Investment Due Diligence for new funds or as part of monitoring funds. The assessment is refreshed at least every eighteen months. Using collected information – via the questionnaire and dedicated discussions with the fund manager if needed – sector analysts will form a view on the robustness of the ESG process (including peer comparison) and present findings back to the investment team.

II. SFDR Principle Adverse Impacts (PAI) consideration approaches

Introduction

Under SFDR regulation, the European Supervisory Authorities (ESAs) have developed through the Joint Committee (JC), a draft Regulatory Technical Standards (RTS) describing rules and methodologies applicable to FMPs and financial advisers, for their sustainability-related disclosures, that was eventually integrated to the Commission Delegated Regulation (EU) 2022/1288 of 6 April 2022 containing technical standards to be used by financial market participants when disclosing sustainability-related information under the Sustainable Finance Disclosures Regulation (SFDR) is available here: [EUR-Lex - 32022R1288R\(01\) - EN - EUR-Lex](#)

In particular the Delegated Regulation 2022/1288 describes in its Annex I approaches for the calculations for the 14 mandatory Principal Adverse Indicators (PAI) for corporates, the 2 mandatory PAIs for sovereigns and supranationals, the 2 mandatory PAIs for real estate assets, and many optional PAIs of which each FMP must disclose on at least 2 (one optional environmental PAI, one optional social PAI) at entity-level. The PAIs cover both social and environmental topics.

PAIs for listed corporate & sovereign assets (AXA IM Core)

For listed corporates assets, we disclose the following PAIs based on S&P Trucost data:

- Mandatory PAI 1: GHG emissions (Scope 1, 2 & 3);
- Mandatory PAI 2: Carbon footprint;
- Mandatory PAI 3: GHG intensity of investee companies;
- Mandatory PAI 4: Exposure to companies active in the fossil fuel sector;
- Mandatory PAI 5: Share of non-renewable energy consumption and production;
- Mandatory PAI 6: Energy consumption intensity per high impact climate sector;
- Mandatory PAI 7: Activities with a negative impact on biodiversity-sensitive areas;
- Mandatory PAI 8: Emissions to water;
- Mandatory PAI 9: Hazardous waste and radioactive waste ratio;
- Mandatory PAI 11: Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises;
- Mandatory PAI 12: Unadjusted gender pay gap;
- Mandatory PAI 13: Board gender diversity.

For mandatory corporate-related PAIs, two exceptions are to be noted for the two following PAIs for which we rather rely of the exposure to issuers covered by AXA IM Controversial weapons and AXA IM ESG Standard exclusion policies:

- Mandatory PAI 10: Violations of the principles of the United Nations Global Compact and the OECD Guidelines for Multinational Enterprises, based Sustainalytics data;
- Mandatory PAI 14: Exposure to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons or biological weapons), based on ISS ESG data.

For sovereigns & supranationals assets, we disclose the following PAIs based on S&P Trucost data:

- Mandatory PAI 15: GHG intensity of investee countries;
- Mandatory PAI 16: Number & share of investee countries subject to social violations.

For all PAIs, the EVIC taken into account is the end of fiscal year EVIC.

PAIs for real estate & infrastructure (AXA IM Alts)

AXA IM Alts applies a bespoke approach in PAI disclosure for Real Estate and Infrastructure in line with the Annex 1 of Delegated Regulation (EU) 2022/1288.

For unlisted Real Estate, the asset manager reports on the mandatory indicators applied to Real Estate and selected the Greenhouse gas (GHG) emissions (Scope 1, 2 & 3) indicator as an optional indicator to integrate carbon related dimension as follows:

- Mandatory PAI 17: Exposure to fossil fuels through real estate assets;
- Mandatory PAI 18: Exposure to energy-inefficient real estate assets;
- Additional climate and other environment-related PAI 18: GHG emissions (Scope 1, 2 & 3).

Focus is made on the collection of actual data (EPC or equivalent in non-EPC jurisdictions, energy consumptions, waste management system, etc.) working closely with the property managers in Real Estate Equity and the borrowers in CRE Debt. Further to the actual data collection, AXA IM Alts is completing the GHG emissions reporting sourcing modelled data from an external real estate ESG data provider to improve the coverage of real estate debt portfolio.

For Infrastructure and Listed Real Assets, AXA IM Alts takes into account the mandatory indicators relevant for Investee companies as well as Emissions of air pollutants and Number of days lost to work-related injuries, accidents, ill health and fatalities for additional indicators as follows:

- Mandatory PAI 1: GHG emissions (Scope 1, 2 & 3);
- Mandatory PAI 2: Carbon footprint;
- Mandatory PAI 3: GHG intensity of investee companies;
- Mandatory PAI 4: Exposure to companies active in the fossil fuel sector;
- Mandatory PAI 5: Share of non-renewable energy consumption and production;
- Mandatory PAI 6: Energy consumption intensity per high impact climate sector;
- Mandatory PAI 7: Activities with a negative impact on biodiversity-sensitive areas;
- Mandatory PAI 8: Emissions to water;
- Mandatory PAI 9: Hazardous waste and radioactive waste ratio;
- Mandatory PAI 11: Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises;
- Mandatory PAI 12: Unadjusted gender pay gap;
- Mandatory PAI 13: Board gender diversity;
- Additional climate and other environment-related PAI 2: Emissions of air pollutants;
- Additional social and employee, respect for human rights, anti-corruption and anti-bribery matters PAI 3: Number of days lost to work-related injuries, accidents, ill health and fatalities.

For mandatory corporate-related PAIs, two exceptions are to be noted for the two following PAIs for which we rather rely of the exposure to issuers covered by AXA IM Controversial weapons and AXA IM ESG Standard exclusion policies:

- Mandatory PAI 10: Violations of the principles of the United Nations Global Compact and the OECD Guidelines for Multinational Enterprises, based Sustainalytics data;
- Mandatory PAI 14: Exposure to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons or biological weapons), based on ISS ESG data.

On Infrastructure, the asset manager combines actual PAI-related data collected through a digital platform and modelled PAI-related data from a ESG data provider to improve asset class coverage, primarily on the Infrastructure Debt portfolio.

On Listed Real Assets, the asset manager follows the approach as AXA IM Core for listed corporate & sovereign assets (see methodology above).

PAIs for alternative credit & other private debt (AXA IM Alts)

AXA IM Alts uses data available in the SFDR Reporting Tool of Octus FinDox' ESGx database for computing PAIs metrics. The following PAIs are available and disclosed for AXA IM Alts Alternative Credit, Natural capital & Impact assets:

- Mandatory PAI 1: GHG emissions (Scope 1, 2 & 3);
- Mandatory PAI 2: Carbon footprint;
- Mandatory PAI 3: GHG intensity of investee companies;
- Mandatory PAI 4: Exposure to companies active in the fossil fuel sector;
- Mandatory PAI 5: Share of non-renewable energy consumption and production;
- Mandatory PAI 6: Energy consumption intensity per high impact climate sector;
- Mandatory PAI 7: Activities with a negative impact on biodiversity-sensitive areas;
- Mandatory PAI 8: Emissions to water;
- Mandatory PAI 9: Hazardous waste and radioactive waste ratio;
- Mandatory PAI 11: Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises;
- Mandatory PAI 12: Unadjusted gender pay gap;
- Mandatory PAI 13: Board gender diversity.

For mandatory corporate-related PAIs, two exceptions are to be noted for the two following PAIs for which we rather rely of the exposure to issuers covered by AXA IM Controversial weapons and AXA IM ESG Standard exclusion policies:

- Mandatory PAI 10: Violations of the principles of the United Nations Global Compact and the OECD Guidelines for Multinational Enterprises, based Sustainalytics data;
- Mandatory PAI 14: Exposure to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons or biological weapons), based on ISS ESG data.

Investment weights can be computed as of the end of each calendar quarter (March, June, September, December). The latest available ESG data available from the ESGx product for each underlying issuer is used for the 14 mandatory PAIs. Financial data is taken as of the end of the applicable reporting year where available (*e.g.*, for 2022 PASI statements, Dec. 31, 2022, financial data is used).

For each of the underlying data points used to calculate the corresponding PAI, ESGx also provides the percentage coverage of the underlying ESG data (*i.e.*, the data coverage on eligible assets).

PAIs for private markets & hedge funds (AXA IM Prime)

AXA IM Prime takes into consideration potential negative impact on the following Principal Adverse Impact indicators, as applicable to its portfolio investments:

- Mandatory PAI 1: GHG emissions (scope 1, 2 & 3);
- Mandatory PAI 2: Carbon Footprint;
- Mandatory PAI 4: Exposure to companies active in the fossil fuel sectors;
- Mandatory PAI 13: Board gender diversity.

PAIs are considered with both (i) qualitative and (ii) quantitative approaches:

- (i) The qualitative approach is based on the application of AXA IM and AXA Group sectorial policies and AXA IM ESG standards. The Policies cover the most material sustainability risks. Annual monitoring and engagement are an additional risk mitigation strategy for principal adverse impacts, through direct dialogue with General Partners (GPs) on sustainability and governance issues. Through its monitoring and engagement activities, AXA IM Prime aims to use its influence as an investor to encourage GPs to mitigate environmental and social risks relevant to their portfolio investments.

- (ii) Quantitative approach: principal adverse impacts are also considered quantitatively by requesting the four PAIs mentioned above to the GPs on an annual basis.

For PAIs 1 and 2, AXA IM Prime has adopted a methodology tailored to its investment types.

AXA IM Prime's portfolios' financed emissions are calculated following the GHG Protocol guidelines and the Partnership for Carbon Accounting Financials (PCAF) guidelines for calculating financed emissions. AXA IM Prime calculates both absolute and intensity-based figures for scopes 1, 2 & 3 of its underlying investments. Scope 3 emissions are tracked separately due to limitations in data availability and quality identified during footprint exercises. AXA IM Prime will continue to collect and track Scope 3 emissions as their disclosure becomes more important in the coming years.

With respect to data sources, AXA IM Prime uses both financial metrics and GHG emissions provided directly from General Partners (GPs). When financial data are available, but the GHG emissions for the underlying AUM are not provided, GHG emissions are estimated using economic activity-based emission factors, in line with the PCAF recommendations.

As part of the calculation exercise a PCAF data quality score from 1 to 5 (1 being the highest quality score / 5 the lowest) is calculated according to the PCAF recommendations, to facilitate data transparency and identify areas for improvement. AXA IM Prime can allocate a data quality score per at an asset level and can also calculate consolidated data quality scores at fund, asset manager and portfolio level.

The four PAIs are reported annually in the SFDR periodic reporting of AXA IM Prime products classified as article 8.

PAIs for multi-manager investments (AXA IM Select)

Since Q4 2023, all SFDR Article 8 and 9 funds of funds managed by AXA IM Select have monitored some of the main PAIs listed in Annex 1 of Delegated Regulation (EU) 2022/1288. The PAI indicators selected and disclosed by AXA IM Select are the following ones:

- Mandatory PAI 2: Carbon footprint;
- Mandatory PAI 13: Board gender diversity.

Since Q4 2023, all SFDR Article 8 funds sub-delegated externally monitor some of the main PAIs. The PAI indicators selected by AXA IM Select are as follows:

- Mandatory PAI 1: GHG emissions (Scope 1, 2 & 3);
- Mandatory PAI 2: Carbon footprint;
- Mandatory PAI 3: GHG intensity of investee companies;
- Mandatory PAI 4: Exposure to companies active in the fossil fuel sector;
- Mandatory PAI 5: Share of non-renewable energy consumption and production;
- Mandatory PAI 7: Activities with a negative impact on biodiversity-sensitive areas;
- Mandatory PAI 10: Violations of the principles of the United Nations Global Compact and the OECD Guidelines for Multinational Enterprises;
- Mandatory PAI 14: Exposure to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons or biological weapons).

Since Q4 2023, all SFDR Article 8 funds sub-delegated to AXA IM monitor some of the main PAIs. The main indicators selected are the same as the ones selected for Article 8 funds sub-delegated externally (listed above) plus the following additional PAI:

- Mandatory PAI 13: Board gender diversity.

The main negative impacts are examined through both a i) qualitative and ii) quantitative approach:

- The qualitative approach is based on exclusion policies that apply in a binding and continuous manner to all sub-delegated SFDR Article 8 funds and that cover the most significant risks related to sustainability factors;
- The quantitative approach is through the measurement of PAI indicators and annual reporting in the SFDR annex of the periodic report. The objective is to provide transparency to investors on significant negative impacts on sustainability factors.

When investing in funds managed by AXA Group companies or in funds managed by external management companies, AXA IM Select relies on the measurement of PAI indicators calculated by a data provider. AXA IM Select annually reviews the performance of selected PAI indicators of the financial management delegate's allocation over the last four quarters. Investments/instruments that appear to have a material negative impact may be subject to an engagement by AXA IM Select. The objective of this engagement may be to encourage the financial delegate to review investments/instruments that have a material negative impact on sustainability factors, and to encourage them to take the necessary actions. The decisions taken by the fund management company to mitigate PAIs will be proportionate to the ongoing measurement of the fund's PAI indicators.

Information on how the main negative impacts on sustainability factors have been monitored during the year is available in the fund's periodic report.

It is worth noting that due to the varying data quality which has not settled yet, there is work in progress to address the same.

III. Carbon footprint methodologies

Carbon footprint for listed assets (corporates & sovereigns)

AXA IM retrieves Scope 1, 2, and 3 data through S&P Trucost for all sectors including financials, which accounts for all upstream and downstream categories of Scope 3, as defined by the GHG Protocol Corporate Value Chain Accounting and Reporting Standard.

Specifically, to collect upstream Scope 3 emissions, S&P Trucost uses its proprietary environmentally extended input-output (EEIO) model. This model uses input-output tables that detail how goods and services produced by each sector are used as inputs by other sectors to produce additional goods and services. By combining these extended tables with industry-specific environmental intensity factors, S&P Trucost can assess the environmental impacts of companies not only on their own operations but on their entire supply chains. This allows for the coverage of all upstream Scope 3 categories.

To collect downstream Scope 3 emissions, S&P Trucost uses data provided by companies themselves as much as possible. This data is used without modification if it has been verified by a third party and if all relevant categories have been calculated. Otherwise, S&P Trucost fills in relevant and yet-to-be calculated categories as well as empty categories using a specific sector intensity, which is determined using the company's own data as well as external reference data. This approach allows S&P Trucost to limit data errors by excluding unverified data and using external reference data to fill in the gaps.

In the Scope 3 there are 15 categories amongst which Financed Emissions (downstream category) which is the bulk of the emissions for a financial company. However, there are only few data providers able to model financed emissions (neither S&P Trucost, nor MSCI). It means that the methodology that AXA IM uses does not account for Financed Emissions. Hence for the financial sector, Scope 3 is mainly upstream.

S&P Trucost's EEIO model is based on input-output tables that detail how goods and services produced by each sector are used as inputs by other sectors to produce additional goods and services. By combining these tables with industry-specific environmental intensity factors, S&P Trucost can assess the environmental impacts not only on a company's own operations but on its entire supply chain, covering all upstream Scope 3 categories. The model uses data from various sources, including national, international, and industry databases, and is tested against disclosures collected from companies during S&P Trucost's annual engagement program. S&P Trucost updates its environmental impact data annually and engages with companies to incorporate the latest publicly disclosed and non-publicly disclosed environmental performance information. S&P Trucost's EEIO model is therefore particularly useful for estimating environmental impacts in the absence of company disclosures. It allows for the assessment of environmental impacts for a company's own operations and across its entire global supply chain, provided the revenue breakdown of the company by industry sector is known.

For sovereigns, World Bank data are used to compute to compute carbon intensity at portfolio level.

AXA IM acquires the comprehensive historical record of carbon data from S&P Trucost, but we only retain the most recent data for each scope. Generally, the data is updated up until year N-1, coinciding with when the Carbon Disclosure Project (CDP) releases the emission records.

For the purpose of reporting, complying with regulations, or addressing client requests, we generate various carbon KPIs such as absolute emissions, weighted average carbon intensity (by revenues, by enterprise value or by GDP) and portfolio carbon footprint.

Carbon footprint for real assets

Real Estate Equity

Real Estate Equity carbon footprint only covers “operational emissions”, meaning emissions linked to the energy consumed to operate a property, which are calculated with actual energy data converted into CO₂ equivalent. Such data are collected at the asset level, in a third-party ESG data platform at least on a yearly basis, with at least a monthly-level granularity. AXA IM is only reporting CO₂ emissions with a location-based approach.

Before collecting consumption data, a Building Qualification form is completed to allow understanding the energy source used in the building and the split between landlord and tenant, as well as a meter form, which identifies and qualifies meters for all utilities. This information is key to the correct interpretation and verification of the consumption data collected.

The data can be collected manually by the Property Managers (from invoices, meter readings, tenant information sharing...) or automatically through supplier or smart metering connection. AXA IM utilizes both internal and external data controls to ensure the quality of the data. We examine data completeness and data quality. Throughout the data collection process automated and manual data controls are undertaken by property managers, asset managers, the RI Team and a third-party auditor.

This reporting process applies to all countries where AXA IM holds and manages real estate assets (Austria, Belgium, France, Netherlands, Luxembourg, Germany, Poland, Spain, Portugal, Italy, UK, Ireland, Denmark, Finland, Sweden, Japan, United States and Australia), except Switzerland, which is only partially embedded in this reporting process and has its own reporting process and tools.

The carbon footprint measurement excludes assets not owned for the full year, as well as assets under development, assets out of scope (parking, plot of land, forest, unit cell, etc.) and platforms.

Data should be collected for the whole building (both landlord-controlled + tenant-controlled areas). This includes all areas for which consumptions cover and may include areas for which AXA IM does not have operational control. Data collect is mandatory only for landlord-controlled areas, where PM has direct access to energy bills. For tenant-controlled areas, the objective is to maximise their collect. For these areas consistent tenant engagement is required. Tenant engagement may include the integration of green leases, organisation of ESG engagement meetings with tenants, or the distribution of ESG Guides and Material to tenants.

Real Estate Equity carbon footprint is calculated with actual energy data only (no estimates), converted into CO₂ equivalent. During the collection process, two factors may impact data completeness:

- Consumption data may be missing over time (ex: data provided only for 11 months out of 12);
- The metering plan may be incomplete (surface non covered).

Coverage is measured using a coverage indicator determining the percentage of days and meters for which data is available for the asset each year. This KPI shows whether the data collected is complete and exhaustive.

GHG emissions are allocated following the recommendations from PCAF, GRESB and CRREM, released in April 2023. AXA IM portfolios are very diversified, with various level of control and ownership. For simplification reasons, the allocation follows the “operational control” allocation approach of PCAF, since this approach is applicable to a majority of assets.

Therefore, Landlord emissions are allocated to Scope 1 and 2 and tenant emissions are allocated to scope 3. Landlord emissions correspond to emissions generated by utilities for which AXA IM is the owner of the utility contract (or the PM on its behalf). To comply with the “precautionary principle”, landlord emissions are all allocated to Scope 1 and 2 at this stage, since for a majority of

assets, no sub-metering system is in place to distinguish what proportion of these emissions are reinvoiced to tenant and therefore should fall in their direct scope of emissions.

However, adopting such allocation is generating an over allocation of emissions in our Scope 1 and 2, since in practice, a majority of the utility consumptions are reinvoiced to the tenants, since consumption is directly linked to tenant use and behaviour.

The landlord-controlled emissions are the emissions associated with energy sources and systems over which the property owner or operator holds operational and financial control. This includes instances where energy bills are received by the owner and where operational control is maintained, such as mechanical, electrical, and plumbing systems (MEP).

Tenant controlled emissions are stemming from energy sources and systems directly managed by tenants. This includes situations where tenants receive energy bills, have operational control, or own the energy utilities. Additionally, emissions related to tenant-owned utilities are categorized as tenant controlled.

Whole building emissions are comprehensive emissions encompassing all operational sources within a building, regardless of whether they are landlord or tenant controlled. This provides a holistic view of the building's carbon footprint. Whole building emissions are only shown if 90% of emissions are covered in time and surface for all utilities.

Scope 1 emissions are emissions that originate from landlord-controlled sources, and involve on-site fuel combustion, such as emissions from burning gas. Scope 1 emissions are only shown if they cover over 90% in time and surface.

Scope 2 emissions are indirect emissions in landlord control resulting from energy production consumed by the property, including electricity and heat purchased from third parties. Scope 2 emissions are only shown if they cover over 90% in time and surface.

Scope 3 emissions are operational emissions within the tenant-controlled domain, covering activities not owned or controlled by the property owner. Scope 3 emissions are only shown if they cover over 90% in time and surface.

The CO₂ intensity whole building is calculated by dividing the annual whole building CO₂ emissions by the total surface area of the building. The WACI is obtained by dividing the weighted annual CO₂ emissions by the weighted value of the asset.

Real Estate Debt

AXA IM retrieves Scope 1+2+3 data through MSCI for all CRE debt portfolio investments as defined by the GHG Protocol Reporting Standard. Specifically, to estimate Scope 1+2+3 emissions at building level. MSCI uses its proprietary [Climate VaR model](#) for real estate assets. This model uses inputs which include at minimum the location and country of each building, its coordinates (latitude-longitude), surface area, real estate asset class and market value and provides among its output Scope 1+2+3 emissions proxy information in tCO₂e/year at building level¹⁰.

This proxy data at underlying asset level (properties financed) is then aggregated at loan level using an AXA IM Alts proprietary methodology which is based on each property's market value.

Infrastructure equity & debt

Overview

Our methodology for collecting carbon data for the Infrastructure Debt and Equity Portfolio involves two primary sources: data directly obtained from investee or borrowing companies (which may be actual or estimated by the investee or borrowing company), and proxy data provided by an external service provider, Iceberg Data Lab (IDL). The data from investee and borrowing companies is collected at the time of investment inception, and on an annual basis thereafter, through automated questionnaires that are circulated to investee and borrowing companies in a data collect management platform called Greenscope, whereas IDL supplies the proxy data.

¹⁰ Sources: MSCI ESG Research and CRREM.

We survey investee and borrowing companies for a wide range of GHG emissions and decarbonization information and KPIs. This includes information regarding their carbon data disclosure that enables us to assess the quality of the collected data in accordance with the PCAF guidelines. A PCAF quality score between 1 and 3 is then assigned to the GHG emissions data reported by investee and borrowing companies. A PCAF score of 4 is automatically assigned to the proxy data received from IDL.

Data Consolidation and Prioritization

Once the ESG data collect is completed, the collected data is consolidated into a central database. When multiple data points exist for a single asset, such as data from both the investee company and IDL, the GHG data with the lowest PCAF score is prioritized. IDL employs a top-down modelling approach using revenue data segmented by respective revenue streams, classified using NACE codes to associate revenue with specific activities. That is why, GHG emissions data from IDL receives the highest PCAF score of 4, while data from investee or borrowing companies receives a score between 1 and 3, depending on its quality and verification level. This explains why, data directly reported by investee or borrowing companies is always preferred.

Quality Assessment

Before integrating data into our central database annually, rigorous quality checks are conducted. These include but are not limited to:

- **Completeness Check:** Verifying the number of assets included to ensure no assets are missing, maintaining data integrity;
- **Formatting Review:** Checking for and correcting any formatting errors, such as incorrect data entries or misplaced values;
- **Revenue Data Validation:** Cross-referencing revenue data with reliable financial records to ensure accuracy;
- **NACE Code Allocation and Mapping:** Confirming that each asset is correctly assigned an appropriate NACE code, mapped accurately to its respective methodology for consistency in classification and analysis; This maintains consistency for sector and activity carbon data comparison.
- **Year-over year evolution checks:** this starts with a review to identify any new investments in the portfolio. It also analyzes changes in data sources for assets with consecutive years of data, identifying shifts from proxy data to actual reported data and vice versa. Significant changes in reported emissions, such as a company reporting lower emissions despite reduced business activities, are investigated with the relevant investment teams for justification
- **Same year data checks:** The analysis normalizes emissions by revenue, enabling efficient comparison across entities and sectors. It includes sector-specific rankings, and comparisons of emission profiles at entity and country level to identify trends, differences across sectors.

Carbon footprint for alternative credit & private debt

For Alternative credit, Natural capital & Impact assets, WACI figures have been established using borrowers' carbon metrics sourced from third-party data provider Octus FinDox for the Leveraged loans, Private debt and CLOs universes as well as underlying assets' originator's carbon data sourced from third-party data provider S&P Trucost for the ABS, Significant risk transfer transactions (SRT) and ILS universes, through their ESGx SFDR reporting tool, using:

- The latest available ESG data available from the ESGx product for each underlying issuer;
- Financial data of the end of the applicable reporting year where available.

For each of the underlying ESG data points used to calculate the corresponding PAI, ESGx by Octus Findox will disclose the percentage coverage of the underlying ESG data.

Carbon footprint for multi-manager investments

To calculate the carbon footprint at multi-manager portfolio level, AXA IM Select uses a homogenized methodology in order to ensure comparability and aggregation via Weefin, an external data provider and aggregator specialized in sustainable finance, which:

- collects underlying funds' inventories through Morningstar in order to get the lookthrough of AXA IM Select portfolios of funds, at instrument level;
- retrieves GHG emissions scope 1, 2, and 3 data through S&P Trucost data, as applied for listed corporate assets do (see above);

- matches the instruments from lookthrough inventories with S&P Trucost datasets at issuer level;
- calculates all mandatory SFDR PAIs, including carbon footprint at AXA IM Select portfolio level and underlying fund level.

IV. Biodiversity footprint methodologies

Biodiversity footprint for listed corporate assets

A key biodiversity-related tool we currently use is the Corporate Biodiversity Footprint (CBF) developed by Iceberg Data Lab (IDL)¹¹ and I Care & Consult¹². The CBF provides data on the potential contribution of issuers or sectors invested to the degradation of biodiversity and thus allows users to start identifying their exposure to nature-related risks. The CBF is currently used for corporate issuers.

Overview of the CBF

The CBF currently measures the extent of a company's estimated negative impact on biodiversity for a given year. This appraisal is based on the impacts generated from the products purchased or sold by companies calculated throughout their value chain.

The CBF measures impacts in terms of contributions to biodiversity loss resulting from the environmental pressures generated by investees' economic activities across their value chain. Amongst the factors contributing to biodiversity loss identified by IPBES, the CBF currently captures impacts associated to land use occupation and land use change, GHG emissions (climate change contribution), water and air pollution. The CBF is calculated via science-based models (including GLOBIO¹³) which have their limits; other remaining drivers of biodiversity loss such as sea use change, invasive species, and overexploitation of natural resources identified by IPBES are not yet covered by IDL's CBF. Some other pressures are only captured partially (*e.g.*, water and air pollution). This may change in the future.

To advance further on the analysis of biodiversity loss drivers, IDL, together with other organisations, is a member of the [EU Commission Align project](#) whose objective is to co-develop recommendations for a standard on biodiversity measurements and valuation.

The value chain approach integrated in the CBF allows to measure direct pressures and impacts generated by a company own activities (Scope 1: GHG emissions coming from the combustion of fossil fuels or chemical reactions, surface artificialization or occupied directly by the company, etc.), by its electricity, steam, heat, and cooling purchase for site-level use (Scope 2), as well as indirect impacts resulting from the company's purchases and supply chain (Scope 3 upstream) and products and services sold (Scope 3 downstream)¹⁴.

CBF Methodology

More concretely, calculation of the CBF is done **in several steps** (see graph below):

1. Define the company's distribution of sales by sector (NACE nomenclature) and by country;
2. Based on this segmentation, and thanks to IDL internal physical Input/Output model, establish a list of products and services purchased and sold by the company throughout its value chain based for each NACE sector and each country;
3. Based on a life-cycle analysis (LCA), calculate the company's environmental pressures (climate change, land use change, air pollution and water pollution) for each product and service;

¹¹ [Iceberg Datalab](#)

¹² [I Care by BearingPoint - Conseil en stratégie et transition durable](#)

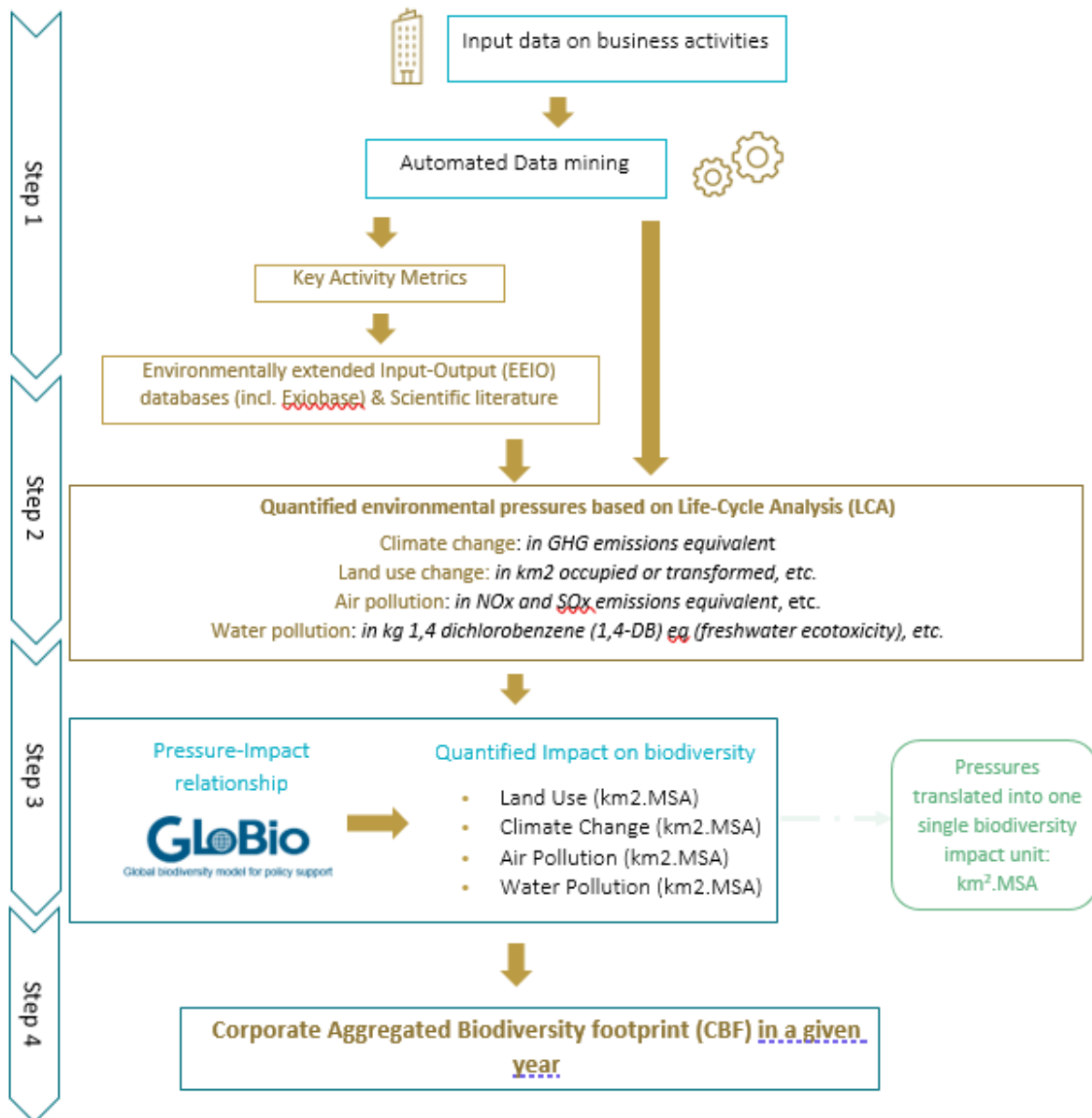
¹³ [GLOBIO - Global biodiversity model for policy support - homepage | Global biodiversity model for policy support](#)

¹⁴ Scope 1, 2 and 3 are defined in line with GHG Protocol, same definitions of Scopes are used by IDL CBF for biodiversity.



4. Using pressure-impact functions (mainly from GLOBIO model), translate the environmental pressures into potential impacts on biodiversity, all expressed with the same aggregable metric;
5. Aggregate the different impacts into an overall absolute impact at company level.

IDL Corporate Biodiversity Footprint Methodology



Source: Iceberg Data Lab, 2021.

The unit of biodiversity impact used to calculate CBF is the km².MSA: this unit may be interpreted as the potential surface of pristine and undisturbed ecosystem lost as a consequence of the environmental pressures exerted by a company.

This metrics results from the combination of two components:

- 1) The MSA expresses the average abundance of native species in an ecosystem relative to their abundance in an ecosystem undisturbed by human activities and pressures. In IDL's model, the impacts are first expressed in terms of relative change in species abundance as compared to a reference (% MSA);
- 2) The relative impact (% MSA) is then associated with the potential surface of ecosystems affected (in km²) to produce an absolute measurement of a company's impacts on biodiversity (km².MSA).

MSA¹⁵ is among the most widespread biodiversity metrics today and presents several advantages:

- It is relevant for biodiversity as based on species abundance. It allows to measure a proxy of global impact of human activities on ecosystems. MSA figures among recognised indicators referenced by IPBES, IPCC, CBD;
- It has already been studied and tested by academics and professional experts;
- It offers a holistic proxy to the biodiversity impact of corporates and allows for comparison between sectors, companies, and progress tracking. It is therefore adapted to evaluate biodiversity impact at an investment portfolio level.

The CBF impacts are modelled at the product or corporate level depending on the pressure and scope (1, 2 or 3). The inclusion of corporate reported data allows to increase the quality of the results. The CBF provides an estimated negative impact measure, meaning that by using this metric, investors can estimate the volume of biodiversity loss caused by pressures generated by a company's economic activities in equivalent **of surface of ecosystems artificialized¹⁶ due to the companies' environmental impacts in a given year.**

CBF at company level

As explained above, first, at company level, the calculation of the CBF starts with an analysis of the distribution of a company's total sales per NACE sectors and country. If not disclosed by the company, the distribution of sales per sector is modelled by IDL. Once the sales are mapped, IDL associates value chains and a list of products and services purchased and sold to each of the company's business segments, based on input and output data from external databases as well as IDL proprietary input and output model.

Based on the value-chain mapping of a company's products' flows (Scope 1, 2 and 3), IDL uses LCA emission factors to calculate the level of land use change, GHG emissions, air pollution and water pollution associated with a company's activities. Using science-based pressure-impact functions (mainly from GLOBIO model¹⁷), IDL then translates all of the four modelled pressures into biodiversity impacts expressed in km² MSA in a given year. At each calculation step, modelled data may be replaced by corporate reported data whenever available.

Impacts are then aggregated into an overall absolute footprint on a company level referred to as the CBF and expressed in the unit km².MSA.

Interpret the CBF metric: What would a km² MSA of -15 mean?

In other words, CBF of for example -15 km² MSA for a given company can be interpreted as an equivalent surface of 15 km² artificialized completely (*i.e.*, 15 km² of pristine forest lost) due to pressures generated on biodiversity by a company's activities across associated value chain (purchases, products and services) in a given year.

The CBF at the company level is also provided by IDL on a disaggregated basis by Scope (Scope 1, Scope 2, Scope 3 – upstream, Scope 3 – downstream) and by biodiversity pressure (Land Use Change, GHG Emissions, Air Pollution, and Water Pollution). This allows users to better understand where a company's pressures on biodiversity may emanate from.

A company reporting data on all biodiversity pressures associated with all its activities is still a rare practice. Most of the data used is modelled data. IDL publishes a Data Quality Level indicator for each company analysed at the aggregate and disaggregated level by scope and pressure to track the degree of reported versus modelled data.

¹⁵ The definition provided is based on IDL's methodology. This indicator was proposed as part of the development of the GLOBIO3 model, the objective of which is to simulate the impact of different human pressure scenarios on biodiversity. The GLOBIO model was developed by PBL Netherlands Environmental Assessment Agency to quantify global human impacts on biodiversity (Source: IDL Methodology).

¹⁶ Artificialization of an environment, of a natural or semi-natural habitat is the loss of its qualities. The term refers to the loss of biodiversity and ecosystems destruction. Artificialization corresponds to the transformation of an environment due to the human presence.

¹⁷The GLOBIO model calculates only local terrestrial biodiversity intactness via MSA (sea or ocean are not considered): [GLOBIO - Global biodiversity model for policy support - homepage | Global biodiversity model for policy support](#)

The following is an illustrative case study of a company's CBF.

Case study – Nestlé SA (Agri-food company)

Nestlé SA is a multinational food and beverage company that is active in different segments: cereals, dairy products, cocoa and chocolate, oil & fats, bottled water, etc.

According to the Iceberg Data Lab's analysis using 2020 data, Nestlé's corporate biodiversity footprint is - 11 996 km².MSA of which 98% is driven by land use change.

Nestlé's corporate biodiversity footprint is specifically driven by its supply chain through the land needed for the raw materials used to manufacture its products. Scope 3 upstream accounts for 99% of its corporate biodiversity footprint. In particular, the presence of such high-impact commodities in its product mix such dairy products which require high land use occupation including to breed and feed the dairy cattle, as well as cocoa beans and cereals needed to manufacture its chocolate and snack products which require a higher land use occupation than other crops.

Nestlé has good disclosure on the sales per segment and per country and considers price differences between locations. Nestlé's Data Quality Level is 3 on a scale of 1 to 5 with 1 being the best. Higher levels of disaggregation and company reported data allows for a high-quality analysis and calculation of the corporate biodiversity footprint.

Source: Iceberg Data Lab as of 31/12/2022. Note that the figures and findings above are intended for illustrative purposes only and are subject to change according to the most recent updates in Iceberg Data Lab's year of analysis and model versions of the CBF.

CBF at portfolio level: AXA IM's portfolios biodiversity footprint

IDL calculates a biodiversity footprint on a company level, which can then be aggregated at a portfolio level following the same logic and aggregation metrics as for portfolio carbon footprint. This aggregation takes into account enterprise value including cash (EVIC). Biodiversity footprint on a portfolio level is then estimated in km².MSA / M€ invested. Note that currently, CBF data aggregation on a portfolio level is done without treating double counting, which may change in the future.

Limitations

Biodiversity footprinting metrics like the CBF should be interpreted as representing estimated, modeled impacts on biodiversity, capturing some but not all potential pressures. As a measurement proxy for likely biodiversity impacts of investee companies, they can be used to better understand potential risk exposure at a point in time and used to support gradual biodiversity mainstreaming in investment processes. While they can provide an initial understanding of impacts, model and inherent limitations mean these should progressively be complemented with a diversity of other research, tools, and metrics.

While insightful, biodiversity footprinting results produced by the CBF should still be interpreted with caution as they are calculated using a modelling approach relying on several hypotheses and assumptions at each calculation step. Any interpretation should bear the following limitations in mind:

- The level of integration of corporate bottom-up data in IDL's model is constrained by corporate disclosure. As CSRD and TNFD become widely adopted, corporate data will become increasingly available which will likely lead to more accurate estimations;
- Certain factors are not yet included in IDL's current model. Namely, not all biodiversity pressures are covered (for example invasive alien species, and sea use change, natural resource use and exploitation), some pressures may be partially calculated for certain sectors and value chain segments, (e.g., plastic pollution), and while impacts are calculated for freshwater and terrestrial biodiversity, they do not cover marine biodiversity;
- Synergistic effects are not taken into account in IDL's model. In the environment, pressures interact with one another, often causing even bigger impacts on ecosystems than the sum of individual pressures;
- MSA only reflects one dimension of biodiversity (species abundance) while science considers that at least 21 variables are essential to accurately describe biodiversity. The MSA indicator would likely have to be completed by a variety of other indicators to more fully capture negative impacts capture negative impacts more fully on biodiversity;
- Economic indicators can influence the results, namely the EVIC which is used for attribution may cause distortions.